DOCUMENT RESUME

ED 202 778 SO 013 399

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TITLE Have You Seen Comenius Lately?
PUB DATE Dec 80
NOTE 14p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Arithmetic; Educational History; Elementary Education; Intermediate Grades; Language Arts; Literature Reviews; *Program Length; Reading Instruction; Scheduling; Social Studies; *Time Factors (Learning)
IDENTIFIERS Comenius (Johann Amos)

ABSTRACT

This paper investigates the proper length of instruction in various curriculum areas. The 17th century educator, Johann Amos Comenius, believed that a teacher should be careful not to present too much for a child to learn. A review of the research shows that there are no clear and ironclad answers. Some studies have shown that large deficits in instruction time do lead to lower academic achievement. For example, an all day kindergarten program leads to higher academic achievement than a one half-day program. Other research indicates that added time produces no significant added achievement. One study involved similar courses in which one group was taught for 55 minutes or longer, and a second group for 45 minutes or less. When they took the Iowa Tests of Educational Development, students showed no significant achievement differences. However, some researchers have had mixed findings on increased instruction time. A study of sixth graders showed that 60-78 minute periods did not lead to higher reading achievement when compared to 40-50 minute periods. In the same study, however, 55-60 minute periods did show higher arithmetic achievement when compared to 35-45 minute periods. Also 40-50 minute periods showed higher language achievement when compared to 25-30 minute periods. Other researchers have reported that added instructional time does lead to increased achievement. For example, a California study called Beginning Teacher Evaluation Study has shown that the more time spent in reading or mathematics instruction, the more students learn of that subject. The paper's conclusions include the following. At the elementary level reading should occupy the largest period of instruction, followed by mathematics, and next language. For the intermediate grades, arithmetic class periods should be closer to 55-60 minutes in length than 35-45, reading classes should be closer to 60-78 minutes than 40-50 minutes, and language classes should be closer to 40-50 minutes than 25-30 minutes. (Author/RM)

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HAVE YOU SEEN COMENIUS LATELY?

December 1980

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SO 013 399

JUN 11 1981

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ABSTRACT

of

"Have You Seen Comenius Lately?"

This manuscript discusses some of the ideas of the seventeenth century educator, Johann Amos Comenius, in relation to modern practices of education. In effect, it tries to compare educational ideas from the past with the findings of current research.

Nine of Comenius's ideas are mentioned, but one is singled out for special attention. He felt that a teacher should be careful not to present too much for a child to learn. Therefore, this article investigates what current research says about the length of instruction time in various curriculum areas.

The article first looks at the areas of instruction in our country's educational history; next it discusses cases against added instruction time; next it reviews findings which are mixed--both for and against increased instruction time; next it discusses findings in favor of increased instruction time; and it ends with conclusions, or practical suggestions for the classroom teacher on increasing instruction time.

The article is approximately ten, double spaced, typed pages (plus bibliography). It is not a research study which I have carried out in a classroom; rather, it is a review of what other researchers have discovered.

Dr. Kent Freeland

HAVE YOU SEEN COMENIUS LATELY?

Johann Amos Comenius died in 1670. However, as often happens with a great man, his ideas live on long after that person is gone. Such is the case for this individual who was born in Moravia (present-day Czechoslovakia) in 1592. The purpose of this article is to discuss some of Comenius's educational ideas in relationship to what current research reveals about them. The ideas are taken from his The Great Didactic. Written between 1628-1632, this treatise "sought to develop an efficient method of instruction that would make learning joyful and progressive and bring light, order, and peace to the Christian community."[1]

Nine of his beliefs are identified below:

1. Development of the child in school begins from within. Thinking, reasoning, and memory skills should be acquired by a student before formal instruction is given in writing.

2. The "whole" should be seen before "smaller parts" are studied. Material should be arranged for a child so that the details are studied after a picture of the entire topic has been achieved.

3. Education should begin early. A child should begin school at a young age so that good habits and proper instruction can take place.

4. Children should be eager to learn. Teachers should kindle in their students the desire to learn.

5. Instruction should be carried out by using simple, short rules. Brevity and clarity by the teacher are important for good education.

6. Students should be taught in accordance with their age and capacities. Children progress through stages of development and these stages determine what they are capable of learning and doing.

7. A teacher should make every effort to assist children in learning. He or she should explain lessons thoroughly; help students in their attempts to do things; and be patient with their mistakes.

8. Relevance is important in education. Whenever possible, a teacher should point out to the students the practical side of the material that is being learned.

9. A teacher should be careful not to present too much for a child to learn. All pupils reach a point beyond which extra minutes of instruction or extra problems do not lead to added valuable learning. The law of diminishing returns operates in economics, but does it apply to education as well? It is this ninth belief which will be investigated later in this article.

Curriculum in the U.S.

How has the time during the school day been allocated? Barley[2] reports that school days consume between 16 and 20 per cent of the waking lives of K-12 students during a school year. Jarvis[3] reports that in 1826 the average school day was about six hours with 91.7 per cent of the day devoted to the three R's. The total time devoted to the three R's increased during the period 1826-1936; however, the per cent declined. This was because the number of school days in the year were increasing. Reading, arithmetic, and language arts have always ranked one-two-three since 1888 with respect to the amount of the time spent per day.[4]

Holmes[5] states that --in the first part of this century-- reading took up 26.3 per cent of the total recitation time in school; arithmetic took up 15.9 per cent; and language took up 13.8 per cent.

Gates[6] more recently has found that reading was allotted the most time in grades one through six; arithmetic was second; social studies, recess, English language, and science tied for third place. Health education, foreign language, unassigned or free time, and miscellaneous ranked last as a group.

Barley[7] has written that the majority of elementary students spend 5.0 per cent of their waking lives on reading; 3.0 per cent on mathematics; 2.6 per cent on language arts other than reading; 1.8 per cent on social studies; 1.4 per cent on science; 1.2 per cent on physical education and recreation; 0.9 per cent on arts and crafts; 0.7 per cent on health education; and 0.7 per cent on other subject areas. In 1960 the most common school year length was 180 days.[8]

The daily curriculum of the elementary school has evolved into six broad subject fields: language arts, social studies, mathematics, art, music, and physical education.[9]

The hours for these subjects are not the same for each child nor for each grade, however. California schools in 1958 suggested that reading/literature be taught at grade one for 350 minutes per week and at grade six for 299 minutes per week; arithmetic at grade one should be taught for 100 minutes per week and at grade six for 225 minutes per week; social studies at grade one should be taught for 225 minutes per week and at grade six for 300 minutes per week.[10]

Recently, however, Powell found that "while state, district, and/or school policies may specify the amount of time to be allocated to basic subject matter areas, the amount of time that is actually allocated to those subject matter areas varies among students and classes."[11]

An example of this fluctuation occurred in California, where the average length of reading instruction in second grade was 86 minutes a day. The range, though, was 36-123 minutes; the fifth grade average was 109 minutes with a range of 59-145 minutes.

The preceding studies show that in the past, varying amounts of time have been allocated to instruction in a particular subject area. Teaching time for reading, for example, has not remained the same. Also, the instruction for a subject is not the same across grade levels. In fact, Jarvis[12] feels that time allotments of the elementary school curriculum have not been based on scientific educational research but rather on societal pressures, administrative expediency, and opinions of leading educators.

Comenius's contention was that a predetermined amount of instruction time cannot be established for all children. This optimum instruction time varies from child to child in different grades as well as varies from child to child within a grade. Moreover, he felt that too much instruction time can overburden a child and lead to wasted efforts by the teacher.

What have recent research findings divulged about the proper length of a class period and the proper length of a school day? First of all, it seems appropriate to state that large deficits in instruction time lead to lower academic achievement. Cleminshaw and Guidubaldi compared Ohio kindergarten

students who attended school for just a half day with those who attended a full day. "The results indicate that children attending an all-day, alternate day kindergarten day do, in fact, score significantly higher on an academic measure than those in a half-day, every day program."[13]

Findings Against Increased Instruction Time

In cases where there is not a large difference on instructional time, it is less clear whether added time leads to added achievement. Some experts say that added time produces no significant added achievement. Husen[14] studied European fourteen-year-old students and asserted that added exposure to school does not bear any substantial relationship to achievement in math.

McElhinney[15] did a study involving courses which had the same title, were taught in the same school, and had the same number of pupils. One group of periods were 55 minutes or longer and the other group was 45 minutes or less. English, mathematics, science, and social studies for grades nine, ten, and eleven showed no significant achievement differences by the Iowa Tests of Educational Development. This held true for low, average, and high aptitude pupils.

Karweit[16] replicated Wiley and Harnsichfeger's study but did not get the same results. Using students in grades three, six, nine, and twelve, she did not find that quantity of schooling is of great practical importance for achievement.

Mixed Findings on Increased Instruction Time

Some researchers had mixed findings. Jarvis[17] studied sixth graders and stated that 60-78 minute periods did not lead to higher reading achievement when compared to 40-50 minute periods. However, 55-60 minute periods did show higher arithmetic achievement when compared to 35-45 minute periods; and 40-50 minute periods also showed higher language achievement when compared to 25-30 minute periods.

Kidder also used Wiley and Harnischfeger's model. He concluded that, "allocated exposure time is related to student performance, even while controlling for school, student, and teacher background factors."[18] At the same time, large amounts of time spent by the teacher with high ability students or small amounts of time with low ability students may not be paying off above a certain point.

Kiesling[19] found that minutes of classroom teacher instruction seemed to be related to student performances when measured by the criterion-referenced tests but not when measured by the standardized test.

Marland[20] performed a study with seventh graders. The experimental group went from five days of arithmetic instruction a week to four days a week. The fifth day was devoted to reading. After one year the experimental group showed a significant increase in reading rate. Oddly enough, the experimental group also showed a slightly higher achievement in mathematics.

Findings For Increased Instruction Time

Other researchers report that added instructional time does lead to increased achievement. Strevell[21] worked with the intermediate grades and set up class periods of 60-78 minutes and 40-50 minutes for reading; 55-60 minutes and 35-45 minutes for arithmetic; and 40-50 minutes and 25-30 minutes for language. In all three subject areas, these results were higher for students who had the longer instructional periods versus those with the shorter instructional periods.

Wiley and Harnischfeger[22] investigated the impact of quantity of schooling. Not only does quantity involve length of the school year and length of the school

day, but it also is affected by (1) Total Allocated Exposure Time, or the time assigned to a specific instructional topic, (2) Per Cent Active Learning Time, or the time a student actively engages in a particular task, (3) Per Cent Usable Exposure Time, or the time that a student can actually use the Allocated Exposure Time, and (4) Total Needed Learning Time, or the time a student needs to learn a task.

Wiley and Harnischfeger regressed achievement variables (verbal ability, mathematics achievement, and reading achievement) on student background characteristics and quantity of schooling. They felt that "in schools where students receive 24 per cent more schooling, they will increase their average gain in reading comprehension by two-thirds and their gains in math and verbal skills by more than one-third."

Kiesling concluded that the amount of classroom instruction is important. His research was done with New York students in grades four, five, and six. "The key substantive finding was that classroom teacher small and large group instruction was related to performance between 30 and 50 per cent of the time on the average."[23]

A California study called Beginning Teacher Evaluation Study (BTES) has been conducted. Powell reports that "The more time spent in reading (or mathematics) instruction; the more students learn of that subject."[24]

A Study in Texas

Approximately 300 years ago Comenius outlined his belief that it is not always profitable for a teacher to increase the amount of instruction if he or she wants to increase a student's knowledge. He reasoned that the results could be similar to filling a small-mouthed bottle with a large pail of water. Some of the water will be lost.

As pointed out earlier in this article, research in the recent decades has confirmed that added instructional time does not always lead to intended results. Part of the explanation for this can be found in a study carried out by the Austin, Texas, school system.[25] Students in grades K-6 were observed and it was discovered that only 47-50 per cent of the six and one-half hour school day was devoted to instructional studies. Approximately one-fifth to one-fourth of the school day was spent in non-instructional activities such as listening to announcements, taking out and putting up supplies, bathroom trips, washing hands, class management/disciplinary actions, directions from the teacher, and waiting for instruction by the teacher. In other words the extra time given to the class period, to the day, or to the year might be used for non-instructional purposes.

The Austin school system set out to correct some of these faults.[26] Their efforts focused on (1) improving classroom management, (2) making sure non-instructional time was kept to a minimum, and (3) making sure multiple federal programs didn't overlap. The result was that 23-34 minutes of instructional time was gained per day, or 10-16 days per year. If these days had been tacked on at the end of the year, the cost would have been between 2.1 and 3.3 million dollars. Therefore, this saved the school system a great deal of money in wages and operating costs.

Conclusions

In summary, **what can we say in the 1980s** in response to Comenius's belief that it's not wise to increase to amount of schooling for a student? Research does not give a clear and ironclad answer, but these practices might be followed:

1. An all-day kindergarten program leads to higher academic achievement than a one-half day program.

2. In the elementary grades, reading should occupy the largest period of instruction, followed by mathematics, and next language.

3. Teaching can be improved by making sure that the students are actually engaged in the task when time is allocated to a task.[27]

4. For the intermediate grades, arithmetic class periods should be closer to 55-60 minutes in length than 35-45 minutes. Good[28] says that the arrangement should take this format: Begin the class with a review, move on to development of the lesson, and then allow time for seatwork.

5. For the intermediate grades, reading class periods should be closer to 60-78 minutes than 40-50 minutes.

6. For the intermediate grades, language class periods should be closer to 40-50 minutes than 25-30 minutes.

As Comenius surmised three centuries ago--and as modern researchers such as Jarvis, McElhinney and others suggest--class periods which are too long might not be worthwhile. If a teacher has to shorten a class or miss it altogether, (Assembly programs, fire drills, etc, can be the cause.), the conclusions of this article imply that it is not wise to add this missed time onto the next day's lesson.

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3. Oscar Jarvis, "Time Allotments and Pupil Achievement in the Intermediate Elementary Grades. A Texas Gulf Coast Study" (ERIC document ED035063, 1962).

4. Henry Holmes, "Time Distributions by Subjects and Grades in Representative Cities." In National Society for the Study of Education. Fourteenth Yearbook Part I, pp. 21-27 (Bloomington, IL: Public School Publishing Co., 1927).

5. Ibid.

6. James Gates, "A Survey of Time Allotment Practices in the Elementary School As Reported by Classroom Teachers in Thirty Public School Systems in Oklahoma" (Ed.D. dissertation, Un. of Oklahoma, 1968).

7. Barley, op. cit.

8. Jarvis, op. cit.

9. Ibid.

10. Ibid.

11. Marjorie Powell, "Time Allocation: Teachers Help Determine Curriculum," Educational Horizons, Summer 1979, p. 177.

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23. Herbert Kiesling, "Productivity of Instructional Time by Mode of Instruction for Students at Varying Levels of Reading Skill," Reading Research Quarterly, Vol. 13 No. 4, 1977-78, p. 579.

24. Marjorie Powell, "New Evidence for Old Truths," Educational Leadership, Oct. 1979, p. 50.

25. Joy Hester and Glynn Ligon, "Where Does the Time Go?" (Paper presented at the Annual Meeting of the American Educational Research Association, Toronto, Canada, March 1978, ERIC Document ED 153 307, 1978).

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27. Charles Fisher, Richard Marliave, and Nikola Filby, "Improving Teaching by Increasing Academic Learning Time," Educational Leadership, Oct. 1979, pp. 52-54.

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